

We claim:

1. A method comprising:
 - coding a plurality of individual product components using at least corresponding coded component identifiers;
 - 5 - coding a plurality of component manipulators using at least corresponding coded component manipulator identifiers;
 - coding a plurality of part-mating operations for at least one of assembly and disassembly as corresponds to at least some of the plurality of individual product components and the plurality of component manipulators;
 - 10 - forming a structured product coding system for a given product by:
 - identifying the components to be used to fabricate the given product;
 - identifying part-mating operations to be used for manufacturing the given product;
 - identifying an initial discrete parsed combination of at least two of the
 - 15 - components and their part-mating operation to be effected as corresponds to initiation of fabrication of the given product and further identifying at least one of the component manipulators to be used to make the initial discrete parsed combination and using the coded component identifiers, the coded part-mating operation identifier and the coded component manipulator identifiers to represent the identified initial discrete parsed combination as a particular corresponding structured product coding system entry;
 - 20 - identifying a subsequent discrete parsed combination of at least the initial discrete parsed combination and at least one of the components and one of the coded part-mating operations to be effected as further corresponds to continuation of the fabrication of the given product and further identifying at least one of the component manipulators to be used to make the subsequent discrete parsed combination and using the coded component identifiers and the coded component manipulator identifiers and the coded part-mating operation identifier to represent the identified subsequent discrete parsed
 - 25 - combination as another corresponding structured product coding system entry.

2. The method of claim 1 wherein coding a plurality of individual product components includes coding, for a plurality of different products, the individual product components that substantially comprise such different products using at least corresponding coded component identifiers such that a given component as used in more than one product will nevertheless have a single corresponding coded component identifier.
- 5
3. The method of claim 1 wherein coding a plurality of individual product components using at least corresponding coded component identifiers includes using coded component identifiers that are comprised, at least in part, of an alphanumeric string.
- 10
4. The method of claim 3 wherein using coded component identifiers that are comprised, at least in part, of an alphanumeric string includes using coded component identifiers that are comprised, at least in part, of an alphanumeric string wherein at least portions of the alphanumeric string comprise parsed information fields.
- 15
5. The method of claim 1 wherein coding a plurality of component manipulators using at least corresponding coded component manipulator identifiers includes coding a plurality of component manipulators as a function, at least in part, of a type of component manipulator.
- 20
6. The method of claim 5 wherein coding a plurality of component manipulators as a function, at least in part, of a type of component manipulator further includes coding at least one of the component manipulators as a function, at least in part, of specific characteristics of the at least one component manipulator.
- 25
7. The method of claim 1 wherein identifying the components to be used to fabricate the given product includes identifying all of the components that are to be used to fabricate the given product.
- 30

8. The method of claim 1 wherein using the coded component identifiers and the coded component manipulator identifiers and the coded part-mating operation identifier to represent the identified initial discrete parsed combination as a particular corresponding structured product coding system entry includes using the
5 coded component identifiers, the coded part-mating operation identifier and the coded component manipulator identifiers to specify a structured product coding system node.
9. The method of claim 8 wherein using the coded component identifiers, the coded
10 part-mating operation identifier and the coded component manipulator identifiers to specify a structured product coding system node includes specifying the node as a part of a structured product coding system hierarchical tree.
10. The method of claim 9 wherein specifying the node as a part of a structured
15 product coding system hierarchical tree includes specifying the node as a part of a structured product coding system binary assembly/disassembly tree.
11. The method of claim 1 wherein using the coded component identifiers and the coded component manipulator identifiers and the coded part-mating operation
20 identifier to represent the identified initial discrete parsed combination as a particular corresponding structured product coding system entry and using the coded component identifiers, the coded part-mating operation identifier and the coded component manipulator identifiers to represent the identified subsequent discrete parsed combination as another corresponding structured product coding system entry
25 includes presenting the structured product coding system entries on an active display.
12. The method of claim 11 wherein presenting the structured product coding system entries on an active display includes presenting the structured product coding system
30 entries as leaves on a hierarchical assembly/disassembly tree.

13. The method of claim 1 and further comprising using the structured product coding system to automatically determine a predicted cost of manufacturing the given product.
- 5 14. The method of claim 1 wherein forming a structured product coding system for a given product further includes identifying component manipulator resetting actions to be effected as corresponds to fabrication of the given product and using the coded component manipulator identifiers to represent the identified component manipulator resetting actions as particular corresponding structured product coding system entries.
- 10 15. The method of claim 1 and further comprising using the structured product coding system to automatically determine a predicted cost of at least partially de-fabricating the given product.
- 15 16. The method of claim 1 and further comprising using the structured product coding system to determine a de-fabrication procedure to facilitate at least partial de-fabrication of the given product.
- 20 17. The method of claim 1 and further comprising using the structured product coding system to facilitate inventory control of at least one of:
 - at least some of the plurality of individual product components; and
 - at least some sub-assemblies comprised of at least some of the plurality of individual product components.

25

18. A manufacturing analysis apparatus comprising:

- a memory containing:

- coded component identifiers that each correspond to a particular individual product component as may be available for use during manufacturing;
- 5 - coded component manipulator identifiers that each correspond to a particular individual component manipulator as may be available for use during manufacturing;
- coded part-mating operation identifiers that each correspond to a particular assembly or disassembly operation as may be available for use during manufacturing;
- 10 - a structured product coding system for at least one given product, which structured product coding system comprises uniquely identified and coded nodes that are at least partially based upon the coded component identifiers, the coded part-mating operation identifiers and the coded component manipulator identifiers, wherein at least some of the coded nodes correspond to discrete manufacturing combinations of product components and at least one of the component manipulators as is used to effect the manufacturing combination.
- 15

19. The manufacturing analysis apparatus of claim 18 wherein the coded component

20 identifiers collectively represent all of the individual product components as are available to a given user.

20. The manufacturing analysis apparatus of claim 18 wherein the coded component manipulator identifiers:

25 - collectively represent all of the individual component manipulators as are available to a given user; and

- collectively can perform all coded part-mating operations required during manufacturing.

21. The manufacturing analysis apparatus of claim 18 wherein the memory further includes cost information as correlates to at least one of:

- the individual product components; and
- sub-assemblies comprised, at least in part, of the individual product components.

5

22. The manufacturing analysis apparatus of claim 21 wherein at least some of the coded component identifiers include the cost information as correlates to the individual product component that corresponds to the coded component identifier.

10

23. The manufacturing analysis apparatus of claim 18 wherein the memory further includes cost information as correlates to the individual component manipulators.

15

24. The manufacturing analysis apparatus of claim 23 wherein at least some of the coded component manipulator identifiers include the cost information as correlates to the component manipulator that corresponds to the coded component manipulator identifier.

20

25. The manufacturing analysis apparatus of claim 18 wherein the memory further includes cost information as correlates to the individual part-mating operation.

26. The manufacturing analysis apparatus of claim 25 wherein the cost information includes all operational expenses incurred during manufacturing.

25

27. The manufacturing analysis apparatus of claim 18 wherein the nodes are organized in a hierarchical tree.

30

28. The manufacturing analysis apparatus of claim 25 wherein the hierarchical tree includes nodes that comprise a hierarchically lower node as combined with an identified product component.

29. The manufacturing analysis apparatus of claim 26 wherein at least some of the nodes that comprise a hierarchically lower node as combined with an identified product component and an identified part-mating operation further comprise a particular component manipulator identifier as is identified for use in effecting the combination of the lower node with the identified product component.

5

30. The manufacturing analysis apparatus of claim 18 and further comprising a programmable manufacturing analysis platform that is operably coupled to the memory.